Re: How to calculate achievable flashlight beam divergence

Source: http://sci.tech−archive.net/Archive/sci.optics/2006−01/msg00040.html

- *From*: Jim Klein <jameseklein@xxxxxxxxxxxxx>

- *Date*: Sat, 07 Jan 2006 19:41:27 GMT

With spelling corrections

Jim Klein <jameseklein@xxxxxxxxxxxxx> wrote:

>"Joe D." <joe@xxxxxxxxxxxxx> wrote:
>
>>Assuming a typical white−light flashlight with a parabolic reflector,
>>how do I calculate the achievable beam divergence?
>>
>>I know it involves the source size, reflector size and focal ratio
>>but I can't find the formula.
>>
>>Also, if you focus the light so the beam is initially convergent,
>>how do I calculate the achievable distance limit for a given beam
>>spot size, and how does that vary with different reflector sizes, f/ratios
>>and source sizes?
>>
>>E.g, a common question is why can't a given flashlight create a
>>convergent beam that makes a small spot at a great distance.
>>Any formula to calculate this is appreciated.
>>
>>−− Joe D.
>>
>>
>Assuming the center of the bulb is at the focus of the parabola,
>measure the distance from the center of the bulb to the vertex of the
>parabola (probably the distance from the center of the bulb to where
>the bulb comes out through the hole in the reflector). Call this the FL
>or focal length.
>
>Measure the diameter of the bulb, call it D
>
>The full angle divergence angle will be close to the arctan(D/FL).
>
>This is approximate but ought to be close.
>
>
>James E. Klein

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>
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>the KDP−2 Optical Design Program
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- ***References***:
  - ♦ ***How to calculate achievable flashlight beam divergence***
    - ◊ *From:* Joe D.
  - ♦ ***Re: How to calculate achievable flashlight beam divergence***
    - ◊ *From:* Jim Klein

- Prev by Date: ***Re: How to calculate achievable flashlight beam divergence***
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